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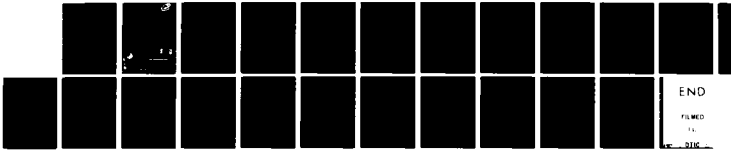

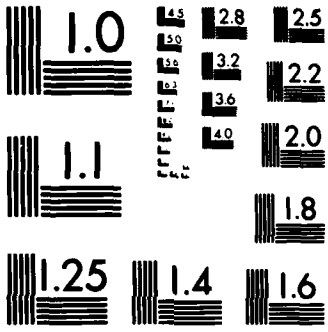

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Comparison of the Predictive Validity of Three Questionnaires Measuring Psychological Defenses

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Abstract

Theories of ego functioning relate the use of defense mechanisms to poorer cognitive functioning, poorer life adjustment, and negative affective responses to stress. Questionnaire measures of psychological defense from the Defense Mechanisms Inventory (DMI), the Coping Operations Preference Enquiry (COPE), and scales developed by Joffe and Naditch (J&N scales) were related to mental functioning, behavioral adjustment, and affect to compare their concurrent predictive validity. Study participants were Marine Corps recruits who failed to complete basic training. Analysis procedures determined the significance of the overall association between a given set of defense measures and each dependent variable, and then applied a rank-adjusted significance test to individual correlations. Overall, the DMI was significantly related to each of six mental functioning variables, the COPE to four, and the J&N scales to only one. For the DMI and COPE, the primary correlates of mental functioning were Denial and Projection and the associations were generally negative as predicted. The J&N scales, particularly Regression and Displacement, were related to poor adjustment as indicated by attrition from training for behavioral problems and quitting high school prior to completion. Overall, the J&N scales were related to each of seven affect measures, the DMI to two, and the COPE to none. J&N associations derived primarily from the association of Regression and Displacement to negative affect. Combined with other research findings, the results suggest that the J&N scales are more effective measures of defenses than either the DMI or COPE in the present sample. Although the magnitude of the associations is modest, they may be limited by both theoretical and methodological factors.

Comparison of the Predictive Validity of Three Questionnaires Measuring Psychological Defenses

Current models for adjustment to stress point to psychological defenses as important determinants of responses to psychosocial stress (e.g., Caplan, Cobb, French, Harrison & Pinneau, 1975; Jenkins, 1979; Rahe & Arthur, 1978). Valid paper-and-pencil measures of defenses would facilitate tests of these models. While many questionnaires intended to measure defenses are available, relatively little is known about their validity. For this reason, a comparison of the Defense Mechanisms Inventory (DMI: Gleser & Ihilevich, 1969), the Coping Operations Preference Enquiry (COPE: Schutz, 1967), and scales developed by Joffe and Naditch (J&N scales: Joffe & Naditch, 1977) was undertaken. Earlier reports showed that scales which presumably measured the same defense were only slightly related (Vickers & Hervig, 1979) and that only the J&N scales correlated significantly with clinical ratings of defenses (Vickers, Ward & Hanley, 1980). The present paper extends the comparison by considering the concurrent predictive validity of the measures from these three instruments with respect to mental functioning, behavioral adjustment, and affective response to a stress situation.

Several hypotheses relating defenses and those dependant variables are examined. In a review of the psychoanalytic theory of defenses, Sjoback (1974, pp. 95-96) stated that, "It has been assumed that general cognitive functions (e.g., those which make possible an understanding of verbal communication) and judgmental functions as a whole, may likewise be blocked by defensive processes." This position was espoused by Fenichel (1945) and is supported by Haan's (1963) finding that defenses were negatively related to IQ test scores and to IQ gain

during development. It is therefore hypothesized that defenses restrict cognitive functions and will be negatively related to measured intelligence.

A second theoretical assumption is that defenses interfere with reality testing and therefore make it less likely that the person will adjust satisfactorily (French, Rodgers & Cobb, 1974; Haan, 1977). An example of evidence supporting this position is Joffe and Bast's (1978) finding that defenses were negatively related to adjustment in blind men. The hypothesized negative relationship may be more pronounced for some defenses than for others (Vaillant, 1977) and applies to the chronic use of defenses rather than their short-term use for adaptation to an acute stress (Hamburg & Adams, 1967). With these qualifications, it is hypothesized that defenses will be associated with poorer adjustment to prolonged stress situations and life in general.

The association between mood and defenses should be more complex than that between IQ or adaptive behavior and defenses. Dividing moods into broad categories of positive and negative affect, three general hypotheses can be advanced. First, defenses which minimize the perceived level of or significance of stress (i.e., intellectualization, rationalization, and denial) or involve repression of negative affect (isolation and repression) will be associated with lower negative affect. Second, defenses which imply perception of a hostile environment and inability to cope with the environment (displacement, regression, and projection) will be associated with higher negative affect. Finally, with the exception of reaction formation, defenses will be associated with lower levels of positive moods. This last hypothesis is based on Sjoback's (1974) observation

that the absence of happiness is commonly accepted as an indication of defensiveness. The single exception, reaction formation, may actively convert negative affect to positive affect. These hypotheses are consistent with those proposed by other researchers who have found modest support for them using the DMI (Clum & Clum, 1973; Gleser & Sacks, 1973). They are also consistent with the findings of a recent study which examined the impact of defenses on reactions to job stress (Vickers, 1979).

The hypotheses that (a) defenses are negatively related to mental functioning; (b) defenses are associated to poor adaptive behavior and (c) defenses, in general, are related to negative affect were examined in a sample of Marine Corps recruits who were being discharged prior to completion of basic training. Studying this population provided the opportunity to explore defenses in a significant real life stress situation, thus overcoming one major weakness of laboratory studies of defenses (cf., Ericksen & Pierce, 1968).

Methods

Sample

The sample is composed of 131 Marine Corps recruits being discharged from the service prior to completion of basic training. The analysis sample is composed of ninety-nine recruits who volunteered to participate; another twenty-six declined to participate, four withdrew from the study during testing, and two additional recruits were deleted from the analyses due to incomplete responses on all questionnaires.

These 99 recruits had an average age of 19.5 years (± 2.24 S.D.) and a mean of 11.2 years (± 1.20 S.D.) of education. Fifty-four participants had less than 12 years of schooling, 41 had 12 years of schooling, and 4 had more than 12 years. Seventy-two participants were Caucasian, 18 were Black, 8 were Mexican-American, and one was American Indian.

Defense Mechanism Measures

The J&N scales are composed of items selected from the California Psychological Inventory which predicted clinical ratings of defenses (see Joffe and Naditch, 1977). Each item is answered either "true" or "false" as it applies to the respondent. Scales for the defenses of Isolation, Intellectualization, Rationalization, Projection, Regression, Denial, Displacement, Reaction Formation, and Repression were scored following the procedures given in Appendix D of Haan (1977). The scale for Doubt was deleted in this study because of time limitations and because it is not common to major lists of defenses (Sjoback, 1974).

The DMI consists of ten short stories dealing with different conflict situations. Each story is followed by a series of statements which measure the use of five clusters of defenses in four behavior areas; actual behavior, fantasy behavior, thoughts and feelings. For each statement, the respondent indicated the likelihood that he would respond to the situation as described using a Likert scale from 0 (very unlikely) to 6 (very likely). The defenses of Turning Against Object (including Displacement), Projection, Principalization (including Isolation, Intellectualization and Rationalization), Turning Against Self and Reversal (including Reaction Formation, Repression and Denial) are measured (see Gleser and Ihilevich, 1969).

The COPE consists of six short stories describing interpersonal conflicts developed from Schutz's (1958) theory of interpersonal relations. Each story is followed by five statements which describe possible reactions to the story. For each statement, the respondent indicated the likelihood that the story protagonist would react as described using a Likert scale of 0 (very unlikely) to 6 (very likely). The defenses of Denial, Isolation, Projection, Regression, and Turning Against Self are measured. The development of this scale has been described by Schutz (1967).

Mental Functioning

Aptitude and general intelligence scores were obtained from the Armed Services Vocational Aptitude Battery (ASVAB: Jensen, Massey, & Valentine, 1976). The ASVAB provided scores for general information, numerical operations, word knowledge, arithmetic reasoning, and space perception. Additionally, an overall score of mental ability, GCT, was computed from the scores on word knowledge, arithmetic reasoning, and space perception.

Behavioral Adjustment

Recruits are discharged from boot camp for a variety of reasons. Based upon the official reason for discharge, four categories of recruits could be identified. Twenty-nine recruits were discharged as erroneous enlistments (EE). This group included discharges due to Marine Corps errors in the recruiting process and medical problems. Training failures (TF) included 31 recruits discharged for inability to perform satisfactorily. Ten recruits were discharged as unsuitable for service (US) because of aptitude, attitude or personality problems. Finally, 22 recruits were discharged for misconduct (MC), including

frequent behavior problems during training and/or concealment of facts that would have prevented their enlistment. The reason for discharge was unavailable for seven recruits. For the analyses to follow, the recruits in the EE group were regarded as having lesser adjustment problems than TF, US, or MC groups, as reasons for discharge in this group did not suggest major behavioral adjustment problems.

"Years of education" was also used as a measure of behavioral adjustment, as completion of high school may indicate a person's ability to adapt to a common life challenge. This provided a measure of behavioral adjustment to a long-lasting life situation in contrast to the acute stress of training.

Affective Responses

Subjective reports of moods were measured by the Mood Questionnaire (MQ: Ryman, Biersner and La Rocco, 1974). The MQ contains a list of 40 adjectives which describe how one might feel. Each adjective is rated on a 3-point scale indicating how you feel at the time of completing the MQ, using response categories of "not at all," "somewhat or slightly" and "mostly or generally." The MQ has scales for Activity, Anger, Depression, Fatigue, Fear and Happiness.

The self-esteem scale developed by Bachman, Kahn, Mednick, et al., (1970) was also included. The recruit indicated the likelihood that each statement described him using a Likert scale from "always false" (0), to "true all the time" (6). This scale is interpreted as a more chronic measure of affect as the items in the scale are similar to those found in depression inventories.

Analysis Procedures

The relationship of defenses to mental functioning and mood was determined by a three-stage correlational analysis. First, the overall significance of the set of correlations relating the defense measures from a given questionnaire to a given dependent variable (e.g., all J&N scales to Anger) was established by a χ^2 test based on the sum of the squared z-scores for the correlations (see Steiger, 1980, p. 429, Equation 22). The set of χ^2's for each dependent measure (i.e., mental functioning and mood) were then subjected to a stepwise Dunn-Bonferroni procedure (Dunn, 1958) to determine the significance of the individual χ^2. Finally, if χ^2 was significant, a rank-adjusted significant test (Stavig & Acock, 1976) was used to determine the significance of individual correlation coefficients. Each questionnaire was considered separately to provide a basis for comparing the questionnaires. Dependent variables were considered separately because defenses might only be related to specific aspects of mental functioning or mood. The subsequent application of the Dunn-Bonferroni procedure should minimize the opportunity to capitalize on chance due to the computation of a large number of χ^2's.[1]

The relationship between behavioral adjustment and defenses was examined by t-test comparisons of the EE group with the combined TF, US and MC groups for each defense measure. A supplementary analysis explored the possibility of defensive differences between the TF, US, and MC groups using analysis of variance procedures. "Years of education" was related to defenses using the correlational procedures described above.

[1]The application of these relatively stringent criteria for establishing the significance of individual results may occasion some loss in power for the tests. This may have led to the acceptance of the null hypothesis in instances where it was false. The full set of correlations is available from the authors.

Results

Mental Functioning

The significant findings from the analyses for the association between defenses and the measures of mental functioning are presented in Table 1. For the J&N scales, the overall association was significant only for Word Knowledge. The rank-adjusted significant test indicated no significant correlations; the highest correlation was with Repression ($r = -.32$). Overall, 28 of the 54 correlations were negative as predicted.

Insert Table 1 about here, see pg 10a

The overall association between the DMI and mental functioning was significant for all six measures. The primary correlates of mental functioning were Reversal and Projection, although the rank-adjusted significant test indicated that only the correlations for Arithmetic Reasoning with Reversal and Principalization and GCT with Reversal were significant. Overall, 24 of 30 correlations were negative.

The COPE scales had significant overall associations to Arithmetic Reasoning, GCT, Space Perception and Word Knowledge. These significant associations were due to several correlations between -.20 and -.30 as no individual correlation was significant. Denial and Projection were the primary correlates of mental functioning. Excluding Turning Against Self, 23 of 24 correlations were negative; all the correlations for Turning Against Self were positive.

TABLE 1

SIGNIFICANT ASSOCIATIONS BETWEEN DEFENSES AND MEASURES OF MENTAL FUNCTIONING

Defenses	Mental Functioning	Overall Association X^2	Overall Association P	Primary Correlates
J & N scales	Word Knowledge	24.05	.005	Repression (r = –.32)
DMI	Arithmetic Reasoning	34.50	.0001	Reversal (r = –.47, p < .01); Principalization (r = –.34, p < .05)
	GCT	27.93	.0001	Reversal (r = –.36, p < .05)
	Word Knowledge	23.87	.0003	Projection (r = –.32)
	General Information	19.78	.002	Projection (r = –.32)
	Numerical Operations	18.30	.026	Reversal (r = –.31)
	Space Perception	13.69	.018	Projection (r = –.26); Turning Against Object (r = –.25)
COPE	Arithmetic Reasoning	22.91	.0004	Denial (r = –.27); Projection (r = –.27)
	GCT	21.49	.0007	Denial (r = –.27)
	Space Perception	18.24	.003	Denial (r = –.27); Projection (r = –.26)
	Word Knowledge	15.46	.009	Denial (r = –.21); Projection (r = –.22)

NOTE: The X^2 test for the overall association and the rank-adjusted significance test for individual correlations were computed using techniques described in the Methods. When no individual correlation was significant, the largest correlate for each measure is given; two correlates are identified when the largest correlations differed by only .01.

Behavioral Adjustment

Student t-test comparisons of the defense scores for the EE group and the combined TF, US, and MC groups produced significant differences only for the J&N scales. The EE group was lower on Rationalization ($\bar{x}$ = 13.85 vs $\bar{x}$ = 15.51, t = -2.28, p < .05), Regression ($\bar{x}$=14.59 vs $\bar{x}$=17.42, t = -2.71, p<.01) and Displacement ($\bar{x}$ = 16.48 vs. $\bar{x}$=19.22, t = -2.79, p<.01). These t-tests correspond to point biserial correlations of r_{pb} = -.25, r_{pb} = -.28, and r_{pb} = -.30, respectively. In view of the large number of statistics computed, these findings must be cautiously interpreted and may be regarded as marginally significant.

Comparisons of the defense measures among the TF, US, and MC groups indicated only a marginally significant difference for J&N regression ($F_{2,52}$ = 3.65, p = .033). Scheffe's multiple range test indicated that the MC group was higher than the US group (p<.05).

Years of education was significantly related to the J&N scales (χ^2 = 41.29, p<0001) and the DMI (χ^2 = 15.70, p<.008), but not to the COPE scales. The rank-adjusted significance test indicated that no individual correlation was significant. For the J&N scales, the strongest correlations were for Displacement (r = -.31), Regression (r = -.29), and Rationalization (r = -.28). The strongest correlation for the DMI was for Projection (r = -.25).

Affective Responses

Table 2 presents the significant associations between the measures of affect and defenses. The overall associations between the J&N scales and affect were significant for all seven affect measures. The primary correlates were Regression

and Displacement which were significantly related to Self-esteem, Fear, and Happiness. Self-esteem was also significantly related to Rationalization and Denial.

The DMI produced significant overall associations to Activity, and Fatigue. Individual correlations of Activity to Principalization and Reversal were significant.

The COPE scales were not significantly associated with any of the affective measures.

Insert Table 2 about here - see pg 12a

Discussion

Conclusions concerning the validity of the DMI, COPE, and J&N scales depend on the specific hypothesis considered. Defenses were negatively related to intelligence test performance for the DMI and COPE as predicted. Poor behavioral adjustment was associated with the J&N scales and to a lesser extent with the DMI. The J&N scales also supported the hypothesis that displacement-based defenses would be associated with negative affect, but these scales did not support the other affective hypotheses. The only significant affective correlates for the DMI and COPE were positive associations between DMI measures and Activity and Fatigue. If activity is a positive affect, this finding is contrary to the hypothesis.

TABLE 2
SIGNIFICANT ASSOCIATIONS BETWEEN DEFENSES AND MEASURES OF AFFECT

Defenses	Affect	Overall Association X^2	Overall Association P	Primary Correlates
J & N scales	Self-Esteem	112.67	.0001	Regression ($r = -.59$, $p < .01$); Displacement ($r = -.52$, $p < .05$) Rationalization ($r = -.49$, $p < .01$); Denial ($r = .29$, $p < .05$)
	Fear	44.51	.0001	Displacement ($r = .42$, $p < .05$); Regression ($r = .34$, $p < .05$)
	Happiness	36.83	.0001	Regression ($r = -.37$, $p < .05$); Displacement ($r = -.31$, $p < .06$)
	Depression	32.75	.0002	Regression ($r = .31$); Displacement ($r = .31$)
	Anger	23.29	.006	Displacement ($r = .29$)
	Activity	20.18	.017	Regression ($r = -.31$)
	Fatigue	19.11	.025	Isolation ($r = .29$)
DMI	Activity	50.83	.0001	Principalization ($r = .44$, $p < .025$); Reversal ($r = .41$, $p < .01$)[a]
	Fatigue	16.66	.006	Reversal ($r = -.31$)
COPE	No significant associations			

NOTE: The X^2 test for the overall association and the rank-adjusted significance test for individual correlations were computed using techniques described in the Methods. When no individual correlation was significant, the largest correlate for each measure is given; two correlates are identified when the largest correlations differed by only .01.

[a]The significance levels for these two correlations differ because the rank-adjusted significance test sets different critical values for each correlation.

Evidence from this study supports the conclusion that the J&N scales measure defenses effectively. An earlier paper partially replicated the initial scale construction by showing that these scales predicted clinical defense ratings (Vickers, Ward & Hanley, 1980). The present marginal support for the behavioral adjustment hypotheses is consistent with findings of Joffe and Bast (1978) and therefore may be given more weight than the strength of the present findings would otherwise justify. The association to affective measures extend the validity for the J&N scales to a new area. The only major failure of the J&N scales to date is the absence of an association to intelligence test performance. The J&N scales as a group, therefore, appear to have some validity, but not all of the individual scales necessarily have the same degree of validity. Results for individual scales should therefore be interpreted cautiously until more information is available for the evaluation of separate scales. Differences in validity for specific scales found in this study may be unique to the particular sample and situation, so the results are not an adequate basis for such evaluation.

The DMI and COPE results are not as encouraging. In this study, these scales were poor predictors of clinical ratings of defense (Vickers, Ward & Hanley, 1980) and of adjustment and affect. The association to intelligence test performance was consistent with our hypothesis and the pattern of correlations (i.e., projection and denial of reversal as primary correlates of test performance) is the same for both sets of measures. Since this similarity of pattern is not likely to occur by chance, the results can reasonably be interpreted as indicating validity with regard to this criterion. Typically, however, mental functioning is not as important a criterion for stress research as the other criteria considered here.

An overall evaluation of the DMI must take into account the fact that it has been widely used and has a body of evidence to support its validity (e.g., Gleser & Ihilevich, 1969; Gleser & Sacks, 1973). However, this instrument provides relatively crude measures of defenses. The five major clusters of defenses assessed are so highly intercorrelated that at most three broad groupings are assessed (Rohsenow, Erickson & O'Leary, 1978; Vickers & Hervig, 1979). Further, the initial groupings of defenses have been questioned on theoretical grounds (Shevrin, Smokler & Wolf, 1979). Because considering patterns of individual defenses may be necessary to understand the effects of defenses (Heilbrun, 1978; Heilbrun & Schwartz, 1979), the DMI may be a poor choice for research except where very general categorizations of defenses are satisfactory. The COPE is similar to the DMI, except that it produces weaker validity findings in the present study and lacks the prior history of use. This instrument would appear least satisfactory of the three except where extreme brevity is critical.

The above conclusions concerning the three defense mechanisms questionnaires must be regarded as tentative on both theoretical and methodological grounds. These conclusions assume that the hypotheses tested in this study are correct. Although these hypotheses are consistent with major trends in psychoanalytic thinking (Sjoback, 1974), they may still be false. The hypotheses are general and may need refinement before the validity of individual defense mechanism scales can be tested. At the same time, this study has considered defenses in isolation from one another when the pattern of defenses may be critical to understanding their effects and testing their validity (Heilbrun, 1978; Heilbrun & Schwartz, 1979). These qualifications point to a need for more explicit

theoretical development to provide more sensitive validity tests while, at the same time, valid measures of defenses are needed to test hypotheses and refine theory. This "Catch 22" aspect of validation and theory development means that both lines of development must progress together.

One methodological consideration is the limited reliability of the criterion variables. Single-point mood measures were used when multiple measurements might have provided more stable estimates and stronger correlations to the essentially trait-like defense measures (Epstein, 1979). The behavioral adjustment measures were very general and each reason for attrition or leaving school at a certain time may reflect a variety of circumstances each with different psychological dynamics. A second methodological consideration is that the stringent statistical significance requirements imposed may lead to an underestimation of the association between the defense scales and the criteria. Relaxing these requirements would not substantially alter the pattern of findings, but would yield more "significant" correlations for consideration. Other methodological points include the special characteristics of the sample and the situation studied. These unique attributes of the study mean that caution is necessary in generalizing the results. However, for the J&N scales, the present replication of other research findings indicates that some generalization is appropriate. Further, it should be noted that if the sample and setting are in fact not representative of a variety of people and settings, this restriction in the range of observations may tend to underestimate the validity of the measures.

Overall, the methodological and theoretical issues noted above point to the possibility that the validity of the defense scales is underestimated in

this study. At the same time, there is some residual uncertainty concerning the generalizability of the findings. These two areas of uncertainty indicate a need for more comparative validity research in other populations and settings. All of these points should be kept in mind when considering the scales for use in future research.

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